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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,171	04/10/2001	Hitoshi Ota	U 013390-0	8787

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10/15/2003

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EXAMINER

SHOSHO, CALLIE E

ART UNIT PAPER NUMBER

1714

DATE MAILED: 10/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

13

Office Action Summary	Application No. 09/832,171	Applicant(s) OTA ET AL.	
	Examiner Callie E. Shosho	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-14 and 16-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-14,16-19,21-27,29,32,33 and 36 is/are rejected.
- 7) ☒ Claim(s) 20,28,30,31,34 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

1. All outstanding rejections are overcome by applicants' amendment filed 7/3/03.
Applicants' submission of foreign priority documents on 8/4/03 is noted.
In light of the new grounds of rejection as set forth below, the following action is non-final.

Claim Objections

2. Claim 30 is objected to because of the following informalities:
There is a period at the end of the second line after formula (I). However, as required under MPEP 608.01(m), except for abbreviations, periods may not be used elsewhere in a claim except at the end of the claim.
Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 32-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Newly added claims 32 and 33 each recite "nonaqueous substituents in the liquid component". The scope of the claims is confusing because it is not clear what is meant by

"nonaqueous substituents". Does this refer to all the substituents in the liquid component other than water? Clarification is requested.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-3, 7-12, 14, 16-19, 21-23, 26-27, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. '419 (U.S. 5,928,419) in view of Ichizawa et al. (U.S. 6,368,397) and either Osumi et al. (U.S. 6,521,034) or Uemura et al. '103 (U.S. 6,451,103).

Uemura et al. '419 process for preparing pigment dispersion which comprises introducing at least one hydrophilic dispersability providing group such as sulfonate group onto the surface of the pigment to form self-dispersing pigment, dispersing 3% pigment in admixture with water and 10-15% wetting agent such as diethylene glycol, and adding 0.1-10% resin for providing dispersability wherein the resin has molecular weight of 25,000. The resin includes styrene-acrylic resin which is added during the dispersion step. The ink which contains the pigment dispersion has surface tension of 25-60 dyne/cm. The pigments include phthalocyanine pigment and quinacridone pigment (col.1, lines 6-9, col.4, line 67-col.5, line 4, col.8, line 64-col.9, line 8, col.9, lines 54-59, col.16, lines 34-35, and Table 3). It is calculated that the resin possesses glass transition temperature of, for instance, 77 °C (SE4, col.16, line 57).

The difference between Uemura et al. '419 and the present claimed invention is the requirement in the claims of (a) amount of polyvalent ions present and (b) amount of hydrophilic dispersability providing group present on the pigment.

With respect to difference (a), Ichizawa et al., which is drawn to ink jet ink, disclose limiting the amount of impurities, i.e. polyvalent metal ions, present in the ink to less than 500 ppm so that nozzle clogging does not occur (col.7, lines 58-65).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to control amount of polyvalent metal ions in Uemura et al. '419 to less than 500 ppm in order to produce ink which will not clog printer nozzles, and thereby arrive at the claimed invention.

With respect to difference (b), while Uemura et al. '419 disclose adding hydrophilic dispersability groups to pigment surface, there is no disclosure of the amount in which such groups are added.

On the one hand, given that the groups are used to control the dispersability and solubility of the pigment, it therefore would have been obvious to one of ordinary skill in the art to control the amount of hydrophilic dispersability groups present to amounts, including that presently claimed, in order to control the dispersability and solubility of the pigment, and thereby arrive at the claimed invention.

On the other hand, Osumi et al., which is drawn to ink composition comprising self-dispersing pigment, disclose using at least 0.45 mmol/g hydrophilic dispersability providing group on the surface of the pigment in order that the pigment form a stable dispersion and not

undergo substantial change in viscosity even when stored for one month (col.2, lines 20-30 and col.3, lines 40-45).

Alternatively, Uemura et al. '103, which is drawn to pigment dispersion, disclose the use of self-dispersing pigment wherein the amount of hydrophilic dispersability providing group on the surface ranges from 0.01-1.5 mmol/g in order to produce pigment dispersion with good storage stability (col.4, lines 32-41 and col.8, lines 3-6).

In light of the motivation for using pigment with specific amount of hydrophilic dispersability providing group disclosed by either Osumi et al. or Uemura et al. '103 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the pigment dispersion of Uemura et al. '419 in order to produce pigment dispersion with good storage stability, and thereby arrive at the claimed invention.

7. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 as applied to claims 1-3, 7-12, 14, 16-19, 21-23, 26-27, and 36 above, and further in view of Takada et al. (U.S. 6,454,403).

The difference between Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 and the present claimed invention is the requirement in the claims of specific wetting agent.

Uemura et al. '419 disclose the use of wetting agent such as diethylene glycol.

Art Unit: 1714

Takada et al. disclose the equivalence and interchangeability between diethylene glycol and acetylene alcohol identical to that presently claimed as solvents used to prevent ink from drying (col.10, lines 16-17 and col.10, lines 61-col.11, line 16).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use acetylene alcohol as the wetting agent in the pigment dispersion of Uemura et al. '419, and thereby arrive at the claimed invention.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 as applied to claims 1-3, 7-12, 14, 16-19, 21-23, 26-27, and 36 above, and further in view of Satake et al. (U.S. 5,814,685).

The difference between Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 and the present claimed invention is the requirement in the claims of acid number of resin.

Uemura et al. '419 disclose the use of alkali-soluble resin as presently claimed, however, there is no disclosure of the acid number of the resin.

Satake et al., which is drawn to ink jet ink comprising pigment dispersion, disclose the use of aqueous dispersion type resin which has acid number of 50-250 so that the resin is stable and the ink possesses good water resistance (col.4, line 62-col.5, line 1).

In light of the motivation for using resin with specific acid number disclosed by Satake et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to

Art Unit: 1714

use resin with such acid number as the resin in Uemura et al. '419, and thereby arrive at the claimed invention.

9. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 as applied to claims 1-3, 7-12, 14, 16-19, 21-23, 26-27, and 36 above, and further in view of Satake et al. (U.S. 5,814,685).

The difference between Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 and the present claimed invention is the requirement in the claims of specific type of resin.

Uemura et al. '419 disclose the use of water-based resin to increase fixing property of ink to substrate, however, there is no disclosure of specific resin presently claimed.

Satake et al., which is drawn to ink jet ink comprising pigment dispersion, disclose the use of aqueous dispersion type resin made from monomers including acrylamide, styrene, and acrylic acid. The resin is used as a binder (col.3, line 10, col.4, lines 37-39, 45, and 62-65, and col.5, line 50).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use specific resin disclosed by Satake as the resin in Uemura et al. '419, and thereby arrive at the claimed invention.

10. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 as applied to

Art Unit: 1714

claims 1-3, 7-12, 14, 16-19, 21-23, 26-27, and 36 above, and further in view of Fujimatsu et al. (U.S. 5,913,971).

The difference between Uemura et al. '419 in view of Ichizawa et al. and either Osumi et al. or Uemura et al. '103 and the present claimed invention is the requirement in the claims of specific type of printer used to print ink.

Uemura et al. '419 generically disclose using ink jet printer.

Fujimatsu et al., which is drawn to ink jet ink, disclose that ink jet inks can be printed with drop-on-demand printers which are well known to energize the ink by dynamic or thermal energy in order to eject ink from printer and produce printed image (col.6, lines 55-61).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to print ink of Uemura et al. '419 with drop-on-demand printer, and thereby arrive at the claimed invention.

Allowable Subject Matter

11. Claims 20, 28, 30-31, and 34-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 20, 28, 30-31, and 34-35 would be allowable over the "closest" prior art if rewritten in independent form as described above for the following reasons.

Uemura et al. '419 (U.S. 5,928,419) disclose process for preparing pigment dispersion which comprises introducing at least one hydrophilic dispersability providing group such as sulfonate group onto the surface of the pigment to form self-dispersing pigment, dispersing 3%

Art Unit: 1714

pigment in admixture with water and 10-15% wetting agent such as diethylene glycol, and adding 0.1-10% vinyl resin for providing dispersability.

However, there is no disclosure or suggestion in Uemura et al. 419 that the pigment is surface treated with polymer as required in present claim 20. Further, the pigment dispersion contains 3% pigment which is outside the scope of the present claims which require that the dispersion step result in dispersion having pigment concentration of 5-50%. Additionally, there is no disclosure of method comprising first making pigment dispersion and then subsequently mixing the pigment dispersion with solvent to form ink or recording liquid as required in claim 30. Rather, Uemura et al. '419 disclose that the ink and the pigment dispersion are one and the same. Further with respect to claims 34-35 which each recite "consisting essentially of" claim language, it is noted that such language limits the pigment dispersion described in the claims from containing any other ingredients which materially affect the basic and novel characteristics of the pigment dispersion. Given that Uemura et al. '419 require use of surfactant which would materially affect the pigment dispersion, the disclosure of Uemura et al. '419 is outside the scope of claims 34 and 35.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application Number: 09/832,171

Page 10

Art Unit: 1714

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Callie E. Shosho
Primary Examiner
Art Unit 1714

CS

10/3/03